



**ASSESSMENT OF THE AVAILABILITY AND  
UTILIZATION OF PREPAID METERS IN ABUJA  
ELECTRICITY DISTRIBUTION COMPANY (AEDC) IN  
LOKOJA METROPOLIS**

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**ABSTRACT**

*The study was able to assess the availability and utilization of prepaid meters in Abuja Electricity Distribution Company (AEDC) in Lokoja metropolis. In order to attain the pertinent information of the study, six research questions and six hypotheses were formulated to guide the study. Survey descriptive design was adopted with the administration of three hundred sixty eight (368) items questionnaire was developed and use to obtain data from respondents three hundred and thirty-five (335) consumer of Abuja Electricity Distribution Company (AEDC) and thirty-three (33) AEDC staff of Abuja Electricity Distribution Company (AEDC) respectively. The data was analysed using frequency, mean, standard deviation and z-test statistics. The null hypothesis was tested at 0.05 levels of significance. The study reveals that level of availability of prepaid meters in Lokoja metropolis, the 'Single phase (2Wire) 5(60) AMPS credit Static meter, 3Phase 4Wire 5(60) AMPS Electronic credit meter among others were moderately available. Indicating that prepaid meter are not fully available to the consumers. It was also discovered that the consumers are highly impressed with the extended of suitability of the use of prepaid meter. The findings depicted that lack of presence of local meter manufacturer, corruption, lack of quality consultation and education, high level of electricity consumption, experiencing difficulty while trying to change tariff, high cost of meter acquisition are factors impeding the provision of prepaid meter, among other are challenges faces provision of prepaid meter. The researcher also recommended that the government should set policies that will enhance local meter manufactures to be productive which will in turn increase its availability, proper regulation should be made on the tariff charge on the*

*prepaid meter in order to enhance its utilization. Consumer should be enlightening on the use of prepaid meter as well as its relevance importance over any other means.*

***Keywords:*** *Availability, utilization, prepaid meters, AEDC staffs and customers*

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## **Introduction**

Energy is a necessity for economic development due to the fact that production of goods and services requires energy. When the supply of energy is insufficient to the sectors of any economy, socio-economic and quality of life of the citizenry will be adversely affected, (Ibrahim and Ukwenya, 2012). Modern developmental trends are highly dependent on the existence of energy infrastructures. There are different kinds of energy which are: Electrical energy, Mechanical energy, nuclear energy, solar energy e.t.c. but the most convenient form of energy is electrical energy. Electrical energy is the energy made available from the flow or moving of electrons in a conductor. In different sectors of development, application of science and technology cannot survive in the absence of electrical energy. In developed countries, the existence of uninterrupted power supply accounts for successful industrial operations, economic growth and contented social interactions. The importance of electrical energy in the development process of any nation is well known and cannot be overemphasized. Electrical energy is the most resourceful and easily controlled form of energy due to its more adaptable nature at the consumer end. The basic concept of electrical energy in Nigeria is divided into generation, transmission and distribution.

Distribution system in a power network is achieved through network configuration and the basic components are: distribution and service substation, distribution transformer, primary distribution feeder and distribution and service main. Distribution networks are typically of two types: radial or interconnected. A radial network leaves the station and passes through the network area with no normal connection to any other supply. This is typical on long rural lines with isolated load areas. An interconnected network is generally found in more urban areas and will have multiple connections to other points of supply. Once the electricity reaches its final destination, it runs through a meter for billing purposes. These meters have traditionally been electromechanical

devices that measure the electricity as it passes through and an employee of Abuja Electricity Distribution Company (AEDC) would come and read how much power had been used during the billing cycle.

Metering system has been in usage by PHCN for the purpose of billing the amount of energy consumed by the consumer and other related issues. Metering according to Simpson (1996) is the process and methods of utilizing devices to measure the amount and direction of electrical energy flow, particularly for end – use. Simpson also defined metering as installation of equipment that make it possible for an utility to determine the amount of electric power a particular customer has consumed. Electricity is provided to customers by wires, often called service drops, emerging from distribution transformers. These wires go into electric meters that measure the quantity of electricity used (measured in kilowatt – hours) in Nigeria, the recent electricity bill payment was only made after consumption of electricity. However, with the drastic increase in non – payment of electricity bills by the customer, the company decides to introduce prepaid meters as way of reducing frequency of the defaulters. Electricity prepaid billing requires consumers to hold and then use the service until the credit is exhausted. Consumer use energy only when they have credit in the prepaid account and supply is stop when such credit exhausted. However, the analyses ignore how consumers and employees of energy provider assess the prepayment system.

Therefore, the view of consumers and employees of energy providers must also be critically examined since the success of prepaid system depends among other factors, their positive contributions. For the effective and proper flow of energy to the consumer through prepaid meters, there should be need for the assessment of these prepaid meters to be used. Assessment is the process of making a judgments or forming an opinion after considering something or someone carefully (oxford, 8<sup>th</sup> edition). Assessment is the process of documenting usually in measured term, skills, attitude and beliefs. However, the attitude of consumers toward non – payment of electricity service charges has been a factor hindering the electricity distribution company of Nigeria this can be traced to the high electricity costs to consumers, provide them with incentive to pilfer electricity or to fudge meter readings.

### **Statement of the Research Problem**

Most consumers especially those living in compound houses where meter sharing is common have been complaining that since they began using the prepaid meters, they spend more than usual. They feel that the prepaid meter runs fast and that they spend twice as much as what they used to spend on the

post-paid meter. Others have been saying their meters frequently develop all kind of faults which usually compel them to go to the premises of Electricity Distribution Company of Nigeria to lodge complain only to waste money on transportation, queue for long hours. Some consumers who are direct in need of credit units on weekend day (especially Sunday) usually find it difficult when they have no access to their bank account. Therefore, the believe by some electricity consumers that use of prepaid meter in Lokoja Metropolis has posed some risk particularly for the financially vulnerability. There is a high risk that the prepaid meter currently in Lokoja metropolis will hide the underlying challenges faced by residents. The lack of periodic information about consumption may also weaken incentives for prepayment meter customers to be more efficient in their use of electricity. All these problems make customers dissatisfied with the use of prepaid meter usage hence the study therefore seeks to assess how available is prepaid meter and it's utilization by customers in the study area.

### **Aim and Objectives of the study**

The aim of the study is to assess the availability and utilization of prepaid meters in Abuja Electricity Distribution Company (AEDC) in Lokoja metropolis. Specifically the study will determine:

1. Level of availability of prepaid meters in Abuja Electricity Distribution Company in Lokoja metropolis
2. Challenges in relation to provision of prepaid meters in Abuja Electricity Distribution Company in Lokoja metropolis

### **Research Questions**

The research will be directed towards providing answer to the following questions;

1. What is the level of availability of prepaid meters in Lokoja metropolis?
2. What are the challenges in relation to provision of prepaid meters in Abuja Electricity Distribution Company in Lokoja metropolis?

### **Hypotheses**

The following null hypotheses were formulated to guide the study which will be tested at 0.05 level of significance:

1. There is no significance difference between the engineers and technicians of Abuja Electricity Distribution Company on the level of availability of prepaid meters in Lokoja metropolis
2. There is no significance difference between the engineers and technicians of Abuja Electricity Distribution Company on the Challenges in relation to provision of prepaid meters in Lokoja metropolis

### **Literature Review**

Electricity is a vital element required for economic growth, poverty reduction and social development. For a stable and economically viable electricity distribution system and an effective and trust worthy revenue collection system a country wide pre-paid metering system is evident. An adaptation of pre-paid metering system can change the needs and the requirements of better solution for the utility companies that make the whole distribution system more dynamic and digitally enhanced. The Power Division has taken the initiative through all distribution utilities to implement a pre-payment metering system with a view to reduce non-technical losses, increase the revenue collection, improve customer's service and reduce the accounts receivable. Governments across the globe have there for given priority to prepayment metering system, considering all the benefits (Power Division, 2011). The concept of prepayment is not new. It was invented in United Kingdom before the Second World War, but major changes had taken place in the 1980's when electronic transfer of credit was introduced (Enbaya 2003). The prepayment system in electricity was however adopted for the first time in Argentina in 1996, when CELCA4, the power distribution company of Carmen de Areco, a small municipality of the Buenos Aires Province, made optional to all consumers within its franchise area the use of prepaid meters. CELCA was created in 1945 and is one of the almost 200 municipal electricity distribution utilities operating in the Province of Buenos Aires. These utilities, most of which were organized as cooperatives, were traditionally allowed to set their own tariffs until 1996, when privatization of the then vertically integrated electricity operator of the provincial state called ESEBA resulted in the creation of independent power producers, three new regional electricity distribution utilities , in whose exclusive franchise areas municipal utilities operate and a

new

provincial regulatory authority, named as Organismo de Control de Energía Eléctrica de la Provincia de Buenos Aires (OCEBA). Following privatization, local electricity distributors purchase energy from one of the three regional utilities at OCEBA's regulated tariffs. This agency also regulated the final tariffs local distributors charge to final consumers.

### **Effects of prepaid meter system**

A big chunk of electricity that power companies generate is lost or remains unaccounted for. This is partly due to the technical losses at the power plants and in the transmission and distribution lines. There is another high percentage loss due to non-technical reasons at customer level such as tampering with the meter, illegal connection and so on. Various attempts have been made to address these vexing problems of non-technical losses such as contracting out meter reading and billing, computerized billing and cut-offs and legal penalties. But nothing has been 100% successful so far. However, amongst all the efforts and endeavors, the one approach that proved to be consumer friendly and cost effective was the prepaid metering system (Power Division, 2011). Pre-payment metering system can reduce accounts receivable and non-technical losses up to zero per cent. The idea of using prepaid meters therefore is to stem the financial drain on power companies such as ECG (Power Division, 2011). According to Ariel A. C. and Luciana N. (2008), consumers switching from the conventional to the prepayment system face two types of cost. One refers to the direct monetary cost, while the other refers to differences in habits that result from replacing a post-consumption and single monthly payment with more frequent payments, which occur prior to consumption. The main direct monetary effect is the cost of the new meter and its associated opportunity cost, which we proxy using the interest rate for savings accounts deposits, which was estimated relating consumers' average expenditure to a rate capturing the opportunity cost of money. According to Eskom (2010), the prepaid meter (PPM) system has several important components. First, there is the prepaid meter (or electricity dispenser' - ED) which is installed in the household. The ED is activated by the input of a 'token', which indicates how much energy the customer has purchased. The token comes in a variety of physical forms, but essentially it represents a string of numbers that are entered into the ED to authenticate the

transaction. In the early stages of the industry, the tokens were disposable cards with magnetic strips, but in the late 1990s keypads became more popular as input mechanisms. The token used for keypad activation is just a string of numbers, communicated to the consumer orally, in written form, or even via an SMS or e-mail. Periodical purchases of electricity imply a change in consumer habits, because they have to incur the extra costs associated to the time spent on additional buys. The extent of this cost would vary with the periodicity of energy reloads (it would be neutral if reloads occurred once a month, as this would demand an effort similar to that incurred when paying the conventional monthly bill) and it would be directly dependent on the user's salary; it is possible to presume that the higher an individual's salary, the higher the opportunity cost of her time. We therefore estimate this cost by firstly computing an average hourly cost that we approximate using census income data for the district, and then multiplying that cost by both the estimated duration of each reload and the average number of yearly purchases made by each household using the prepayment system. Thus, in principle, prepaid metering offers utility providers the possibility of decreasing the administrative and financing costs of electricity delivery, which in turn will bring down the cost of electricity delivery, or yield higher returns to the utility, or both. Utility providers have long been aware of the potential advantages of prepaid electricity delivery over credit metering, but it was not until the mid-1990s that (partly as a result of the technology development led by Eskom) the prepaid meter (PPM) technology evolved to a level that would allow its widespread implementation (Ariel A. C. and Luciana N., 2008). The Power Division of the Ministry of Power, Energy and Mineral Resources, Republic of Bangladesh, has summarized the benefits of prepaid meter as follows; Customers like the system because (Power Division, 2011):

- It is transparent
- Easy to add credit to the meter through smart card
- They can control their own consumption
- They can control their budget
- No hassles with bill payment, disconnection or reconnection
- There is no minimum charge
- Require no deposit

- No more disputed bills
- Warning for low credit
- Abnormal voltage protection
- Automated record keeping

The power company also benefits in the following way (Power Division, 2011):

- Upfront payment,
- Improved cash flow,
- Decreased non-technical losses,
- Lower overheads expenses (no meter reading or billing),
- Increased revenue,
- No outstanding debt
- Tamper protection
- Non-allowance of over sanctioned load
- Better load management.
- Better customer services
- Automated record keeping

Create power saving attitude to the consumers  
Using software to run prepayment rather than hardware has a number of advantages

(Oracle, 2011):

- Elimination of hardware costs—not just procurement but also installation, maintenance, and replacement.
- Extension of the program to all interested parties. There are no special meters. Any advanced meter will do, so long as it includes either remote connect / disconnect or flow restriction capabilities.
- The utility can use a single billing system for all customers, provided it has appropriate capabilities.
- Customers can use a utility's existing infrastructure for payments. Granted, some utilities may choose to offer tokens or smart cards, plus the ability to top them up.



Others may choose to offer in-house displays but neither is required.

### **Research Methodology**

A descriptive survey research design was utilized for this study. A descriptive survey design is a design where questionnaire was administered to solicit for the opinion of the AEDC staff and customers on the availability and utilization of prepaid meters in Lokoja metropolis. (Ali, 2006) explained that a descriptive survey research design, views facts about things or individuals are collected through questionnaire, observation or interview which are analyzed and use for answering research questions. This study will be carried out in Abuja Electricity Distribution Company (AEDC) in Lokoja metropolis. The target population of this study was 2100 of Abuja Electricity Distribution Company comprises of AEDC staffs and consumers using prepaid meters in Lokoja metropolis. No sample technique was used in regards to the AEDC staff since population is of manageable size. Meanwhile proportional stratified random sampling technique was employed to draw out sample size from Abuja Electricity Distribution Company customers in lokoja metropolis. Using taro Yamane formula finite sample size: 
$$= \frac{N}{(1+N(e)^2)}$$
, where

n= the sample size, N= the finite population, e= level of significance (0.05), I= unity.

A structured questionnaire titled; questionnaire for assessing the response of AEDC staff and customers in Lokoja metropolis in Kogi State. This was developed by the researcher and used for data collection. A five point likert rating scale of measurement was used for sections. Copies of the drafted instruments will be subjected to face and content validation by two experts: in Electrical and Electronics Technology in the Department of Industrial and Technology Education, Federal University of Technology, Minna, Niger State and one AEDC staff. The experts were requested to suggest modifications on the structure of items, organization and assess' appropriateness of the study. A pilot study was conducted by administering the questionnaire to AEDC staffs and customers in Abuja. The generated data was analyzed using the Cronbach's alpha and the reliability coefficient was found to be 0.91 using statistical package for social science (SPSS). The researcher used Cronbach's alpha

method because the study involved testing the internal consistencies of the instrument and the AEDC customer in Abuja was used because it is not part of the area of the study. The method of data collection was through administration and collection of the questionnaire from the respondents by the researcher and research assistants. The questionnaire was administered to the respondent and collect after a week interval from the date of administration. Data collected for this study will be analyzed using mean and z-test statistics. Mean will be used to answer the research questions while z-test will be used to test the hypothesis at 0.05 level of significance. A five point likert rating scale was used for research question A, B, C, D, E and F. Any item with a mean of 3.00 and above was considered Adopted while item with a mean of 3.00 and below was considered not adopted. Z-calculated value above the z-critical value shows significance difference between the mean responses of the respondents and the null hypothesis will be adopted.

**Analysis of Research Questions**

**Research Question One**

What is the level of availability of prepaid meters in Lokoja Metropolis?

**Table 4.1: Mean and Standard Deviation Responses of Technicians and Engineers on Level Availability of Prepaid Meters**

ITEMS	Engineers (N1 =17)		Technicians (N2= 16)		$\bar{X}_{AV}$	Remark
	$\bar{X}$	SD	$\bar{X}$	SD		
Single phase (2Wire) 5(60) AMPS credit Static meter	4.47	0.567	4.38	0.656	4.425	AV
3Phase 4Wire 5(60) AMPS Electronic credit meter	4.31	0.592	4.44	0.556	4.375	AV
3Phase 4Wire 10(100) AMPS (Whole current) Electronic credit meter	4.03	0.74	4.26	0.734	4.145	AV
3PH 4W CT operated Static energy meter	2.91	0.963	3.33	1.087	3.12	MA

Keypad single & three phase electricity dispenser	2.63	0.707	2.84	0.68	2.735	MA
Split type prepayment single & three phase dispenser	2.31	0.859	2.51	0.772	2.41	MA
Automatic meter reading system (AMR)	2.16	0.808	2.42	0.768	2.29	MA
Single phase (Dual Prepayment and Credit Type)	2.06	1.014	2.22	0.913	2.14	MA
<b>Grand Total of <math>\bar{X}_T</math> and <math>SD_T</math></b>	<b>3.111</b>	<b>0.78</b>	<b>3.30</b>	<b>0.77</b>	<b>3.21</b>	<b>MA</b>

N1 = Number of Engineers, N2 = Numbers of Technicians,  $\bar{X}$  = mean of Engineers and Technicians/Technologist, SD = Average Standard Deviation of Engineers,  $\bar{X}_{AV}$  = mean of Engineers and Technicians/Technologist, AV = Available MA = Moderately Available.

Table 4.1 above unveil the respondent responses on the level of availability of prepaid meter in Lokoja metropolis. The outcome of the result disclosed the Technicians as well the Engineers view on the level of availability of the prepaid meter in Lokoja metropolis, from the result presented above, the level availability of prepaid metre was ranked to be moderately average available with the grand mean ( $\bar{X}_T$ ) of 3.21.

The result also revealed that ‘Single phase (2Wire) 5(60) AMPS credit Static meter, 3Phase 4Wire 5(60) AMPS Electronic credit meter and 3Phase 4Wire 10(100) AMPS (Whole current) Electronic credit meter’ are available with mean value (4.43, 4.38, 4.15) respectively which are value above 3.50. Meanwhile the 3PH 4W CT operated Static energy meter, Keypad single & three phase electricity dispenser, Split type prepayment single & three phase dispenser, Automatic meter reading system (AMR), Single phase (Dual Prepayment and Credit Type) are moderately available with mean value (3.12, 2.74, 2.41, 2.29, 2.14, 3.21) below 3.50.

It was revealed the both Technicians and Engineers do not detached in view of the level of availability with the standard were not too far from the mean of their responses.

**Research Question Two**

What are the challenges in relation to provision of prepaid meters in Abuja Electricity Distribution Company in Lokoja Metropolis?

**Table 4.2: Mean and Standard Deviation Responses of Engineers and Technicians on Challenges in Relation to Provision of Prepaid Meters**

ITEMS	Engineers (N1 =17)		Technicians (N2= 16)		$\bar{X}_{AV}$	Remarks
	$\bar{X}_A$	SD <sub>A</sub>	$\bar{X}_A$	SD <sub>A</sub>		
Lack of presence of local meter manufacturer	4.31	0.93	4.22	0.99	4.27	Agreed
Corruption	4.5	0.72	4.46	0.75	4.48	Agreed
Free basic electricity policy	4.28	0.85	4.2	0.81	4.24	Agreed
Lack of quality consultation and education	4.19	0.99	4.09	0.99	4.14	Agreed
High level of electricity consumption	3.88	0.91	4.05	0.89	3.97	Agreed
Unattainable politically motivated promises	3.81	0.90	3.9	0.89	3.86	Agreed
Experiencing difficulty while trying to change tariff	3.75	1.19	3.77	1.18	3.76	Agreed
High cost of meter acquisition	3.72	1.25	3.69	1.26	3.71	Agreed
By pass frequently by consumer.	4.38	1.13	4.53	0.97	4.46	Agreed
<b>Grand Total of <math>\bar{X}_T</math> and SD<sub>T</sub></b>	4.09	0.99	4.10	0.97	4.10	Agreed

N1 = Number of Engineers, N2 = Numbers of Technicians,  $\bar{X}$ = mean of Engineers and Technicians, SD = Average Standard Deviation of Engineers,  $\bar{X}_{AV}$ = mean of Engineers and Technicians.

Table 4.2 disclosed the respondent view on challenges in relation to provision of prepaid meters in Abuja Electricity Distribution Company in Lokoja Metropolis. The result revealed that the provision of prepaid is actually hinder by numerous challenges with grand mean value  $\bar{X}_T(4.10)$ .

The result disclosed the Engineers as well the Technicians view on the challenges in relation to provision of prepaid meters, from the outcome of the analysis presented above, participant of the study laments on lack of presence of local meter manufacturer, corruption, free basic electricity policy, lack of quality consultation and education, high level of electricity consumption, unattainable politically motivated promises, experiencing difficulty while trying to change tariff, high cost of meter acquisition and the bypass frequently by consumer with average value of 4.27, 4.48, 4.24, 4.14, 3.97, 3.86, 3.76, 3.71 and 4.46 respectively.

The result also unveil the participant opinion do not differ in the view regarding the challenges in relation to provision of prepaid meters in Abuja Electricity Distribution Company in Lokoja Metropolis.

### **Findings of the study**

The findings of the study on research question one showed that three (3) types of the prepaid meter are available in Lokoja Metropolis while five (5) the list type of prepaid meter are moderately available. Available prepaid meters are; single phase (2Wire) 5(60) AMPS credit Static meter, 3Phase 4Wire 5(60) AMPS Electronic credit meter and 3Phase 4Wire 10(100) AMPS (Whole current) Electronic credit meter. The moderately available are 3PH 4W CT operated Static energy meter, keypad single & three phase electricity dispenser, split type prepayment single & three phase dispenser, automatic meter reading system (AMR) and single phase (Dual Prepayment and Credit Type).

The findings of the study on research question two uncovers that all the nine (9) items are the major challenges in relation to provision of prepaid meters in Abuja Electricity Distribution Company in Lokoja Metropolis which are; lack of presence of local meter manufacturer, corruption, free basic electricity policy, lack of quality consultation and education, high level of electricity consumption, unattainable politically motivated promises, experiencing

difficulty while trying to change tariff, high cost of meter acquisition and the bypass frequently by consumer.

### **Discussion of Findings**

The findings emanated from the result of research question one, unveils the level of availability of prepaid meter in Lokoja metropolis. The responses of the participant show the level of availability of prepaid meter that three (3) types of the prepaid meter are available in Lokoja Metropolis while five (5) the list type of prepaid meter are moderately available. Available prepaid meters are; single phase (2Wire) 5(60) AMPS credit Static meter, 3Phase 4Wire 5(60) AMPS Electronic credit meter and 3Phase 4Wire 10(100) AMPS (Whole current) Electronic credit meter. The single phase (2Wire) 5(60) AMPS credit Static meter was rated to be the most used prepaid meter by the consumer especially for residential purpose. This in line with the outcome of the findings of (Carolyne *et al.*, 2013), that assess the effect of prepaid service transition in electricity bill payment, the study also rate single phase (2Wire) 5(60) AMPS credit Static meter to be most used by consumers. This is followed by the use of 3Phase 4Wire 5(60) AMPS Electronic credit meter which in consonance with that of (Carolyne *et al.*, 2013; Chris and Eguabor, 2014) which was stated to be one the available prepaid meter in Nigeria.

The moderately available are 3PH 4W CT operated Static energy meter, keypad single & three phase electricity dispenser, split type prepayment single & three phase dispenser, automatic meter reading system (AMR) and single phase (Dual Prepayment and Credit Type). The 3PH 4W CT operated Static energy meters are moderately available for consumer, since the need or request for it is not rampant, it is only made available when an individual or industries requested for it, this outcome is supported by the findings (Chris and Eguabor, 2014; Sharko and Dasho, 2015), their study also unveil automatic meter reading system (AMR) and single phase (Dual Prepayment and Credit Type) to be moderately available.

The findings emanate from the research question two revealed challenges in relation to provision of prepaid meters in Abuja Electricity Distribution Company in Lokoja Metropolis. The result divulges all the items such as; lack of presence of local meter manufacturer, corruption, free basic electricity policy, lack of quality consultation and education, high level of electricity

consumption, unattainable politically motivated promises, among others to be the major challenges affecting provision of prepaid meters. The finding of Makanjuola *et al.*, (2015), review these problems in their study on various challenges impeding the provision of prepaid meter system in Nigeria. The inadequate production level of local meter manufacturer and corruption was stated to be part of the challenges facing provision of prepaid meter.

## **Conclusion and Recommendations**

### **Conclusion**

The need for adequate energy supply is a necessity for economic development due to the fact that production of goods and services requires energy, most especially electrical energy as it is the most resourceful and easily controlled form of energy due to its more adaptable nature at the consumer end. The link between any electrical distribution industrial to the final consumer end is the metering system which control the input uses of electrical energy as well as measuring the level of usage. In view of the metering system (prepaid metre) which handles the consumption of electrical energy by consumers. The present study was able to assess the availability of prepaid meters in Abuja Electricity Distribution Company (AEDC) in Lokoja metropolis. In the outcome of the investigation it was assessed: level of availability of prepaid meters in Lokoja metropolis, challenges in relation to provision of prepaid meters in Abuja Electricity Distribution Company in Lokoja metropolis. On the basis of this research the following conclusion were made:

From the finding of the study it was unveiled that prepaid meters were not highly available to for the consumers, the ‘Single phase (2Wire) 5(60) AMPS credit Static meter, 3Phase

4Wire 5(60) AMPS Electronic credit meter among others were moderately available.

It could be concluded from the outcome of the study that the participant of the study especially the consumers of the electrical energy are highly impressed with the extended of suitability of the use of prepaid meter. The findings revealed numerous challenges facing the provision of prepaid meter, among these are lack of presence of local meter manufacturer, corruption, free basic electricity policy, lack of quality consultation and education, high level of electricity consumption, unattainable politically motivated promises,

experiencing difficulty while trying to change tariff, high cost of meter acquisition.

It can also be concluded from the finding various techniques such as establishment of local smart meter manufacturer, reduction in corruption, review of free basic electricity policies, adoption of energy conservative policies, engagement of competent and qualified personnel and discontinuation of defaulters are considered to enhance availability of prepaid meters. Finally, it could be concluded that techniques such as; prepaid meters be affordable to every citizen, installation of modern prepaid meters, adoption of free installation, training of personnel for technical fault rectification, adoption of free replacement of faulty meters, provisions of proper guide on the use of prepaid meters, proper monitoring of installed prepaid meters among others will enhance the utilization of prepaid meters in Lokoja Metropolis.

### **Recommendations**

The following recommendations were made for implementation based on the findings of this study;

1. The government should set policies that will enhance local meter manufactures to be productive which will in turn increase its availability.
2. Proper regulation should be made on the tariff charge on the prepaid meter in order to enhance its utilization.
3. There should be regular training and retraining of staffs of Abuja Electricity
4. Distribution Company (AEDC) (Both Engineers and Technicians/Technologist) on maintenance practices to be carried out on prepaid meter.
5. Consumer should be enlightening on the use of prepaid meter as well as its relevance importance over any other means.
6. Proper sanction should be imposed on any defaulters of the prepaid meters.

### **Suggestions for Further Research**

1. Impact of the use of prepaid meter in revenue generation in Abuja Electricity Distribution Company (AEDC) in Lokoja metropolis.



2. Maintenance practices adopted by the technicians for proper utilization prepaid metering system in Abuja Electricity Distribution Company (AEDC) in Lokoja metropolis.
3. Assessment of the effect of prepaid service transition in electricity billing of AEDC customers in Abuja Electricity Distribution Company (AEDC) in Lokoja metropolis.

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